

AMENDMENTS TO THE CLAIMS

The listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1. (Withdrawn) A neighboring base station information update method in a mobile communications system including a plurality of base stations that transmit perch channels and neighboring base station information, and a mobile station that receives the neighboring base station information, searches a perch channel in accordance with the neighboring base station information, and receives the perch channel, said neighboring base station information update method comprising:

in said mobile station,

a base station information capturing step of capturing from a received perch channel, base station information about the base station that transmits the perch channel; and

a base station information transmitting step of transmitting the base station information captured in said base station information capturing step to one of said base stations, and

in said one of said base stations,

a base station information receiving step of receiving the base station information said mobile station transmits; and

a neighboring base station information updating step of updating the neighboring base station information in accordance with the base station information received in said base station information receiving step.

Claim 2. (Withdrawn) The neighboring base station information update method as claimed in claim 1, wherein

the perch channel is spread into a wideband using a spreading code with a rate higher than an information rate, and in addition, is doubly spread using a first spreading code set that has a cycle period equal to an information symbol period and is common to all the base stations, and a second spreading code that has a cycle period longer than the information symbol period and differs from base station to base station; and

the base station information consists of a second spreading code number used by the base station and phase information about the second spreading code.

Claim 3. (Withdrawn) The neighboring base station information update method as claimed in claim 1, wherein

the perch channel is spread into a wideband using a spreading code with a rate higher than an information rate, and in addition, is doubly spread using a first spreading code set that has a cycle period equal to an information symbol period and is common to all the base stations, and a second spreading code that has a cycle period longer than the information symbol period and differs from base station to base station; and

the base station information consists of a second spreading code number used by the base station.

Claim 4. (Withdrawn) The neighboring base station information update method as claimed in claim 1, wherein the base station information consists of a radio frequency of the perch channel.

Claim 5. (Withdrawn) The neighboring base station information update method as claimed in claim 1, wherein said one of said base stations rearranges the neighboring base station information in a descending order of the number of times each base station is included in the base station information received in said base station information receiving step.

Claim 6. (Withdrawn) The neighboring base station information update method as claimed in claim 1, wherein said one of said base stations rearranges the neighboring base station information in a descending order of handover success rate of each base station, which is calculated from success or failure results of handover.

Claim 7. (Withdrawn) The neighboring base station information update method as claimed in claim 1, wherein said one of said base stations rearranges the neighboring base station information in a descending order of the number of handover successes of each base station.

Claim 8. (Withdrawn) The neighboring base station information update method as claimed in anyone of claim 5-7, wherein said one of said mobile stations carries out perch channel search at a higher frequency for a higher priority base station, and at a lower frequency for lower priority base station.

Claim 9. (Withdrawn) The neighboring base station information update method as claimed in anyone of claim 5-7, wherein said one of said base stations transmits the neighboring base station information of upper N base stations, where N is a predetermined constant.

Claim 10. (Withdrawn) A mobile communications system including a plurality of base stations that transmit perch channels and neighboring base station information, and a mobile station that receives the neighboring base station information, searches a perch channel in accordance with the neighboring base station information, and receives the perch channel,

said mobile station comprising:

base station information capturing means for capturing from a received perch channel, base station information about the base station that transmits the perch channel; and

base station information transmitting means for transmitting the base station information captured by said base station information capturing means to one of said base stations, and

said base stations comprising:

base station information receiving means for receiving the base station information said mobile station transmits; and

neighboring base station information updating means for updating the neighboring base station information in accordance with the base station information received by said base station information

receiving means.

Claim 11. (Withdrawn) The mobile communications system as claimed in claim 10, wherein

the perch channel is spread into a wideband using a spreading code with a rate higher than an information rate, and in addition, is doubly spread using a first spreading code set that has a cycle period equal to an information symbol period and is common to all the base stations, and a second spreading code that has a cycle period longer than the information symbol period and differs from base station to base station; and

the base station information consists of a second spreading code number used by the base station and phase information about the second spreading code.

Claim 12. (Withdrawn) The mobile communications system as claimed in claim 10, wherein

the perch channel is spread into a wideband using a spreading code with a rate higher than an information rate, and in addition, is doubly spread using a first spreading code set that has a cycle period equal to an information symbol period and is common to all the base stations, and a second spreading code that has a cycle period longer than the information symbol period and differs from base station to base station; and

the base station information consists of a second spreading code number used by the base station.

Claim 13. (Withdrawn) The mobile communications system as claimed in claim 10, wherein the base station information consists of a radio frequency of the perch channel.

Claim 14. (Withdrawn) The mobile communications system as claimed in claim 10, wherein said base stations rearrange the neighboring base station information in a descending order of the number of times each base station is included in the base station information received by said base station information receiving means.

Claim 15. (Withdrawn) The mobile communications system as claimed in claim 10, wherein said base stations rearrange the neighboring base station information in a descending order of handover success rate of each base station, which is calculated from success or failure results of handover.

Claim 16. (Withdrawn) The mobile communications system as claimed in claim 10, wherein said base stations rearrange the neighboring base station information in a descending order of the number of handover successes of each base station.

Claim 17. (Withdrawn) The mobile communications system as claimed in anyone of claim 14-16, wherein said mobile stations carry out perch channel search at a higher frequency for a higher priority base station, and at a lower frequency for lower priority base station.

Claim 18. (Withdrawn) The mobile communications system as claimed in anyone of claim 14-16, wherein said base stations transmit the neighboring base station information of upper N base stations, where N is a predetermined constant.

Claim 19. (Withdrawn) A mobile station that searches a perch channel transmitted by a base station, and receives the perch channel, said mobile station comprising:

base station information capturing means for capturing from a received perch channel, base station information about the base station that transmits the perch channel; and

base station information transmitting means for transmitting the base station information captured by said base station information capturing means to a base station.

Claim 20. (Withdrawn) A base station that transmits neighboring base station information, said base station comprising:

base station information receiving means for receiving the base station information a mobile station transmits; and

neighboring base station information updating means for updating the neighboring base station information in accordance with the base station information received by said base station information receiving means.

Claim 21. (Original) An information management method for cell search in a mobile communications system comprising:

a capturing step of capturing, in a handover-source base station, phase difference information between a long period spreading code of a common control channel from said handover-source base station and a long period spreading code of a common control channel from a handover-destination base station, the phase difference information being calculated by at least one mobile station that is communicating with said handover-source base station; and

a storing step of storing, in said handover- source base station and/or its control station, the captured phase difference information.

Claim 22. (Original) The information management method for cell search in a mobile communications system as claimed in claim 21, wherein

said storing step stores, in said handover-source base station and/or its control station, an average of a plurality of pieces of the phase difference information between the long period spreading code of the common control channel from said handover-source base station and the long period spreading code of the common control channel from said handover-destination base station, the plurality of pieces of the phase difference information being captured from a plurality of mobile stations that are communicating with said handover-source base station.

Claim 23. (Previously Presented) The information management method for cell search in a mobile communications system as claimed in claim 21, further comprising:

a supplying step of supplying, from a control station that stores the phase difference information to said base station, the phase difference information between said base station and its neighboring base stations from among the phase difference information stored.

Claim 24. (Original) A cell search method of a mobile station comprising:

a capturing step of capturing, from a base station, phase difference information between a long period spreading code of a common control channel of said base station and a long period spreading code of a common control channel of a neighboring base station of said base station; and

a cell search step of carrying out cell search in accordance with the phase difference information captured.

Claim 25. (Original) The cell search method of a mobile station as claimed in claim 24, wherein the cell search step carries out the cell search within a fixed time range in accordance with the phase difference information captured.

Claim 26. (Original) A base station comprising:
storing means for storing phase difference information between a long period spreading code of a common control channel of said base station and a long period spreading code of a common control channel of a neighboring base station of said base station, the phase difference information being captured from a mobile station; and
management means for managing the phase difference information stored in said storing means.

Claim 27. (Original) A base station comprising:
storing means for storing phase difference information between a long period spreading code of a common control channel of said base station and a long period spreading code of a common control channel of a neighboring base station of said base station, the phase difference information being supplied from a control station of said base station; and
management means for managing the phase difference information stored in said storing means.

Claim 28. (Original) A control station comprising:

storing means for storing phase difference information between a long period spreading code of a common control channel of a base station controlled by said control station and a long period spreading code of a common control channel of a neighboring base station of said base station, the phase difference information being captured from said base station it controls; and

management means for managing the phase difference information stored in said storing means.

Claim 29. (Original) A mobile station comprising:

phase difference information storing means for storing phase difference information between a long period spreading code of a common control channel of a base station and a long period spreading code of a common control channel of a neighboring base station of said base station, the phase difference information being captured from said base station; and

cell search means for carrying out cell search in accordance with the phase difference information stored in said storing means.

Claim 30. (Original) The mobile station as claimed in claim 29, further comprising:

first long period spreading code type storing means for storing types of long period spreading codes of a predetermined number of base stations to be subjected to the cell search, said mobile station being notified of the types from said base station;

second long period spreading code type storing means for storing types of long period spreading codes of the base stations to be subjected to the cell search, the types corresponding to

the phase difference information, and said mobile station being notified of the types from said base station; and

comparing means for comparing information stored in said first long period spreading code type storing means with information stored in said second long period spreading code type storing means,

wherein said cell search means carries out the cell search in accordance with the phase difference information in response to a compared result by said comparing means.

Claim 31. (Original) A mobile communications system including a base station and a mobile station,

said base station comprising:

base station storing means for storing phase difference information between a long period spreading code of a common control channel of said base station and a long period spreading code of a common control channel of a neighboring base station of said base station, the phase difference information being captured from said mobile station; and

management means for managing the phase difference information stored in said storing means, and

said mobile station comprising:

mobile station storing means for storing the phase difference information captured from said base station; and

cell search means for carrying out cell search in accordance with the phase difference information stored in said mobile station storing means.

Claim 32. (Original) A mobile communications system including a base station,
a control station for controlling the base station, and a mobile station,

said control station comprising:

control station storing means for storing phase difference information between a
long period spreading code of a common control channel of said base station and a long
period spreading code of a common control channel of a neighboring base station of said
base station, the phase difference information being captured from said base station; and

control station management means for managing the phase difference information
stored in said control station storing means,

said base station comprising:

base station storing means for storing the phase difference information supplied
from said control station; and

base station management means for managing the phase difference information
stored in said base station storing means, and

said mobile station comprising:

mobile station storing means for storing the phase difference information captured
from said base station; and

cell search means for carrying out cell search in accordance with the phase
difference information stored in said mobile station storing means.